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ABSTRACT

Fifth graders were taught to use an electronic card catalog to retrieve information and materials for class assignments and leisure reading materials. Groups of 10 or 12 students were seen twice a week for periods lasting up to 30 minutes. At these sessions they were introduced to computer components, proper handling, how to log into a network system, and how to search for materials using Boolean terms and keyword searches. The author developed lesson plans to introduce strategies from fundamentals through advanced techniques. Special teaching methods were used to enhance critical thinking. Students also used practice keyboarding machines to help with typing skills, and a tape recorder was available so that they could listen to instructions as they did online searches. The post-test revealed that all these strategies were effective for teaching students to use the online catalog effectively, and the students' ability to have their own work stations contributed to the study's success. Project evaluations revealed the students' preferences for using an electronic database because of the options it allows. Three tables present study data, and eleven appendixes contain survey and evaluation instruments as well as supplemental information. (Contains 31 references.) (Author/SLD)

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Teaching Fifth Graders Electronic Information Retrieval Skills

by

Annette Christy

Cluster 59

A Practicum I Report Presented to the
Ed.D. Program in Child and Youth Studies
in Partial Fulfillment of the Requirements
for the Degree of Doctor of Education

NOVA SOUTHEASTERN UNIVERSITY

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PRACTICUM APPROVAL SHEET

This practicum took place as described.

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June 1, 1994
June 1, 1994
Date

This practicum report was submitted by Annette Christy under the direction of the advisor listed below. It was submitted to the Ed.D. Program in Child and Youth Studies and approved in partial fulfillment of the requirements for the degree of Doctor of Education at Nova Southeastern University.

Approved:

June 22, 1994
Date of Final Approval of Report

Wm. W. Anderson
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Advisor

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ABSTRACT

Teaching Fifth Graders Electronic Information Retrieval Skills. Christy, Annette., 1994: Practicum Report, Nova Southeastern University, Ed.D. Program in Child and Youth Studies. Media Center/Electronic Card Catalogs/Information Retrieval Systems/Online Searches/Information Retrieval Teaching/Computer Literacy

This practicum was designed to provide training to fifth graders in the techniques of using an electronic card catalog to successfully retrieve useful information and materials for class assignments, and leisure reading materials. Groups of ten to twelve students were seen twice a week for periods lasting up to 30 minutes.During these sessions, students were introduced to the components of a computer, its proper handling, how to log into a network system, and how to search for materials, using Boolean terms and keyword searches.

The writer developed lesson plans which introduced information retrieval strategies from very fundamental concepts to those of advanced techniques. Special teaching methods were used to enhance the critical thought patterns of these younger students. Some of the strategies employed were an emphasis on repetiton of the major concepts of the previous lesson,and the use of alternate words in topic and subject searches was stressed. Students used practice keyboarding machines to help them with typing skills,and a tape recorder was available to them so that they could listen to instructions of how to use the electronic catalog as they did an online search.

The post test data revealed all of these strategies were very effective in getting fifth graders to use an electronic card catalog successfully. They also became knowledgeable in the techniques of online searching and in the use of Boolean search terms. Being able to have their own work stations, from which they could experiment and re-do any of the lesson's objectives was a definite factor in the practicum's success. Their project evaluations revealed a definite preference for using an electronic data base because of the many options it provided to them.

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CHAPTER I

INTRODUCTION

The topic of how to get our nation on the information superhighway is frequently discussed in currently-published articles from Popular Mechanics to publications by the Association for Educational Communications and Technology. As the National Information Infrastructure, or NII, becomes more of a reality, educators will have to prioritize their instructional goals (Vizard, 1993). Learning to do computerized searches is a needed skill as students enter the middle grades. Middle schoolers must be given the skills of how to search for information online and also how to access additional networks for data needed and relevant to them (Smith, 1992; Snyder & Graham, 1994).

Description of Community

This paper was concerned with the teaching of these informational skills to middle schoolers. The media center within this writer's middle school was the setting for this instuction. This middle school media center provides services to grades five through eight. Most of these

in-coming fifth graders are from two area elementary schools with self-contained classrooms. There were approximately 57 fifth graders enrolled at this time of this project. These students had been accustomed to much smaller media centers with few technologies available to them.

Writer's Work Setting and Role

The media center is staffed with a media specialist and a full-time aide. The center is considered very large, by middle school standards, and consists of an entire wing which was added to the school in 1987. Because of its size, and personnel, the center offers many services which would not be possible, in smaller facilities. These programs range from broadcasting Channel One and foreign language instruction to CD-ROM programs, electronic encyclopedias, online searching of the card catalog, and computerized check-outs.

It was this writer's role to provide access to all information retrieval systems. The students' first level of expertise must be how to correctly utilize all the features of the electronic card catalog. The fifth graders, in particular, had to acquire these skills before they could go on to access other online data bases. If they experienced success with finding the needed information which was pertinent to their assignments, they would continue to seek out additional avenues of online information from other sources housed within this media center.

CHAPTER II

STUDY OF THE PROBLEM

Unfortunately, these fifth graders did not understand how to use the electronic card catalog. Recent studies have confirmed that this is a definite problem nation-wide (Edmonds,Moore, & Balcom, 1990). Although children generally show less fear of computerized technologies than adults, they prefer to use the traditional card catalog, when given a choice. This preference stems from a feeling of familiarity and the security of prior experiences (Edmonds,Moore, & Balcom).

Problem Description

Therefore, most of the fifth graders would not use the electronic card catalog. They tried to locate materials by either using the traditional catalog, or by asking for assistance from the media center staff. Unfortunately, the traditional catalog does not contain current information on the center's holdings. When the center was automated in 1988, all additions to the catalog were stopped. Thus, students who only use this source of information, are denied access to a complete listing

of the media center's collection.

Frequently, the fifth graders showed an unwillingness to try using the electronic catalog voluntarily. To try and overcome this reluctance, it is the media center's policy not to answer questions which clearly showed the patron had not even attempted to use any catalog in the center. Staff members remind the student that the electronic catalog is available to them and offer to help them access the needed information on it. This writer feels that this policy is justified in order to get as many students as possible comfortable and knowledgeable in using online resources in their daily school assignments.

Problem Documentation

Pre-tests have shown little knowledge of how to access the information through the electronic card catalog (Appendix A). As orientation classes began for the in-coming fifth graders, one of the activities was to give them a short pre-test on their knowledge of accessing an electronic catalog. This was a hands-on demonstration of their knowledge and skills. The questions were geared towards naming specific titles, authors, or what subject a call number represented. Most of the students could not answer these questions correctly, because they did not know how to access the electronic catalog for these answers.

In a two-week time period, the media center staff has observed that

three out of four fifth graders would use the traditional card catalog and not attempt to use the electronic catalog. Certainly their previous media center experiences had always been with a traditional card catalog in their primary schools. Perhaps there was also a sense of security in knowing that if one drawer did not contain the needed series of letters, another, close to it, would. The electronic screen does not offer this kind of security. A blank screen, or just a flashing cursor, and even a continual beep may be very annoying and discouraging to a younger student.

After the observation period ended, the media staff began to ask students why they did not use the electronic catalog. These interviews were conducted during a four-day time span. A class of 28 fifth graders was individually asked three questions concerning their usage preference of card catalog to electronic catalog. The first question asked the student was which catalog he or she used. The second question asked which one did the student prefer. The last question asked, "Would you use the electronic catalog, if you knew how?" A record of these interviews again substantiated the original conclusions of the media staff. Those conclusions were that the fifth graders would not use the electronic catalog without receiving individual or small group training by the media center staff.

Up to this time, these fifth graders had only been asked to conduct an information search which required one or two sources. They seemed to ignore the element of time which a traditional search would take. They

also did not have the sophistication for conducting multi-level searches using an online catalog for greater access to many types of information.

Causative Analysis

Clearly, the problem consisted of these elements. Previously, an online catalog was unavailable to these fifth graders. They did not know how to use an automated library, nor had they had any experience with an instant screen display of information. Another factor to be considered was that their keyboarding skills were a definite problem because they had had no typing instruction of any kind. For this reason, the fifth graders viewed having to use a keyboard to access the desired information as very intimidating. Merely pulling out a drawer, was much easier. The hands-on approach of using a card catalog, even though more time-consuming, seemed to offer a security that a monitor and keyboard just could not do (Edmonds, Moore, & Balcom).

Still another barrier for these fifth graders seemed to be the new menu options of an online catalog. These options tended to confuse the students. The terms author, title, subject were not fully comprehended by these students. When asked how to find a book by a particular author, almost invariably, the fifth graders would begin to type the author's first name, instead of the surname. Through the interviews and observations, the staff had seen several frustrated fifth graders abandon the electronic catalog, and walk over to the card catalog to

start their search again, or just find a staff member to ask where something could be found.

Relationship of the Problem to the Literature

A literature search revealed many ways to address this problem. First of all, students must know how to use the library technologies (Mancall, Lodish, & Springer, 1992; Maple & Jones, 1991). This skill would be essential to them throughout their lives (Romm, 1993). Technology will keep providing changes at an ever-accelerating pace (Vaughan, 1993). Richard Wurman writes that the amount of information doubles every eight years. It is imperative that today's students be given the training to access information quickly, efficiently, and as early as possible (Wurman, 1989). School libraries must help their students learn how to do this (Handy, 1993). Michael Eisenberg also offers several arguments to justify why it is mandatory to give students the training, expertise, and skills in accessing information electronically. Both he and Michael Brown spoke to the 1991 ALA Conference presenting their findings on the value and importance of libraries giving instruction in informational retrieval skills. The American Library Association's Information power further advances this concept in its opening statement, " The mission of the library media program is to ensure that students and staff are effective users of ideas and information" (1988, p.1).

The need for online training early in students' academic careers has been recognized by North Carolina's State Department of Public Instruction. In 1985, it published a complete curriculum guide for school libraries to use with kindergarten through twelfth grades. This guide stressed the need for school libraries to teach information retrieval skills which are to be entirely integrated with other curricula. There is to be no separation of these skills from others taught in the classrooms. The theory is that teaching information retrieval skills promoted thinking processes and that these processes were to be an integral part of the student's learning patterns which could be used in all areas of his or her academic accomplishments.

The State Library of Pennsylvania also recognized that there was a definite need to train students how to access databases electronically in its 1985 curriculum guide for school library media centers which is entitled, Pennsylvania online. In it, lesson plans were presented which discussed what topics the librarian should present to the classes, what kinds of materials and resources were needed for each type of lesson plan, and finally, what the "expected achievement levels" whould be (p.9). It then suggested certain procedures for evaluation. In its introduction, it quoted from The National Commission on Libraries and Information Science, " ...children (should) learn how to find and use information effectively. This skill is seen as the 'fourth R' and is essential in the learning process from cradle to grave" (p.34).

Furthermore, the literature discussed the impact that information

retrieval skills acquisition had on businesses and education. Since databases increase constantly, a school curriculum must be developed which emphasized the collecting and interpreting of information from a variety of sources (Buboltz & Ling-Louie, 1991). Today's students will be the workforce of the 21st century and they have to know how to use the resources which will be available to them in the future (Buboltz, et al). Teaching them how to access and collect data will give these students knowledge in using the scientific method (Rux, 1991). Rux referred to school libraries as "both a resource and a process" (p.22). He further advocated that libraries must be the means to teach students how to search for materials by using thinking skills. Then, the next task for the library is to supply the materials or resources to complete this information search. Rux firmly believed that throughout this search process, students would gain analytical skills, comparasion techniques, and communication skills.

CHAPTER III

ANTICIPATED OUTCOMES AND EVALUATION INSTRUMENTS

Goals and Expectations

An important goal for the media center to have accomplished is that all fifth graders will learn to utilize the electronic card catalog and obtain the needed information from it. They will become familiar with the layout of the media center, learn where various subjects of the center's collection are housed, and also learn, by name, the components of a computer, their functions, and how to handle the equipment properly. This training will be necessary in order for them to be successful in being able to locate the selected materials after they have conducted their electronic searches

Expected Outcomes

The following objectives were expected outcomes for this practicum. These goals were expected to be met as a result of the implementation of this practicum and its successful completion.

1. By the end of the implementation period, 50 of 63 fifth graders will use the electronic card catalog, unassisted, as evidenced

in a review of help request cards by the media center staff.

2. Upon ending the implementation, 50 of 63 fifth graders will demonstrate how to use the features of an electronic card catalog, as evidenced by the student usage survey.
3. After completing this implementation, 45 of 63 fifth graders will prefer using the electronic catalog more than using the traditional catalog , as evidenced by a student preference questionaire.
4. By the end of the implementation period, 50 of 63 fifth graders will increase their usage of print and non-print materials from the media center, as evidenced by individual circulation records.

Measurement of Outcomes

The outcomes of this practicum were to be measured by a variety of instruments and teaching strategies. Each of the goals had a definite method of measuring its impact on the students and their learning..

Measuring student awareness of the greater capabilities of an electronic search over a traditional catalog search was done with a short questionaire (Appendix D). Results of this questionaire showed which students used the online catalog, liked using it, and were satisfied with the information they received from it.

After a student had finished an electronic search on the terminal, another measurement tool which was used was a student usage survey.

This survey asked students what information they accessed from the electronic catalog (Appendix E). How many students used the online system, what kinds of information they required of it, what search tools they used, and the reasons they needed this information, as well as their grade level was also fully documented in this survey.

During the last week of instruction, students were asked to complete a preference questionaire which asked them which catalog they preferred to use and the reasons for this preference (Appendix D). It was to be expected that students chose the electronic catalog after being trained in all the techniques of online searching.

As a final evaluation instrument, a post test required them to demonstrate these information retrieval skills. This test took place during the twelfth week of instruction. It asked them to utilize the electronic card catalog to find authors, titles, subjects, call numbers, media types or realia, and to initiate a keyword search for materials (Appendix B).

This test was given to all 57 fifth graders upon their completion of the skills instruction. Certificates of achievement were awarded to all those who scored ninety or better.

CHAPTER IV

SOLUTION STRATEGY

Discussion and Evaluation of Possible Solutions

The problem to be addressed by this practicum was to teach fifth graders how to use the electronic card catalog correctly so that they could locate needed print and non-print materials in the media center.

Wilson (1985) writes that within the United States thousands of databases now exist which can provide users with immediate access to information. She further writes that the United States has the most technologically advanced communications systems world-wide, but is 49th of 158 nations in literacy. How valuable can all this technology be, if so many people do not have the fundamental skills to use it? Today's society is spellbound by the possibilities and the capabilities of electronic technology and the changes it will bring to future generations (Wilson). But to ready these future generations, these future workers for new life and work skills, planning must occur early in their academic careers. Today's students need skills training in the art of accessing electronic information.

In 1987, Goodin in Newton, New Jersey conducted a study to determine if search strategy and information-gathering skills taught to high

schoolers would be used in their college careers. Results from this study concluded that there is definite transferability of library research skills from one level of schooling to another.

Kulthau conducted a similar survey in 1987. She studied the responses of 140 high school seniors, grouped according to achievement. The study identified six successful search strategies and examined how seniors from each achievement group, low, middle, and high, conducted information retrieval searches. The study concluded that successful searchers used a logical sequence of search strategies, and critical thinking skills to access the needed information. Kulthau confirmed that these techniques had been taught to these students by the library staff. Successful searchers used task initiation, topic selection, a prefocus exploration, a focus formulation, collected information, knew when to conclude a search, and when to begin writing. These strategies were evidenced in high and middle achievers, but the results for the lower-achieving students were inconclusive.

These studies confirm the importance of teaching students search skills as early as possible in their academic careers. They also show that these search strategies will be retained and used as the student continues schooling. There is validity to the claim that teaching search strategies to students gives them a lifelong skill which will never be obsolete.

There is still another aspect to be considered. It has been proven that students do use and transfer their information retrieval skills to

other, more advanced levels of schooling. Hooten (1989) believes that students must also learn to transfer their search techniques to other online systems. She specifically discusses the online public access catalogs, or OPACs, found in many public libraries. She mentions the ability of a user, living in a remote area, to still be able to search multiple databases. Another advantage online services give their users is that there are no lines waiting to use just one card catalog drawer, and having to choose from just one building's print collection. Today's youth must receive training in accessing data from one automated system at school, and then also learn how to access more data from a public library's automated database. Hooten advocates a cooperative arrangement evolving between school libraries and public libraries so that students can become proficient in many, different, automated systems.

Computer-assisted instruction, or CAI, is being used increasingly to teach library research and information skills (Gratch, 1989). This software is primarily geared for early and middle schoolers and uses drills, practices, tutorials and colorful graphics to teach the basic skills in reference instruction. Because of the success of these CAI programs, software producers have offered more advanced programs to accomodate upper high school and college-level instruction on search strategies. The importance of producing a population, knowledgeable in the technique of information retrieval, is deemed to be of the utmost importance by not just media specialists, but also by business and

industry. Gratch believes that the potential benefits of CAI are without limits.

As students move beyond the basic electronic searching techniques, more advanced databases can be introduced to them. Weisburg and Toor (1993b) urge that giant networks, such as Internet, can be introduced to all students. Both of these authors strongly advocate library/media centers enter into this new arena. Although there is some cost involved, the benefits for the media center's patrons certainly outweigh this expense. Internet presents the opportunity to show students and staff that "libraries are larger than their walls" (Weisburg & Toor, 1993a, p.14).

Since these fifth graders do not know how to use an electronic card catalog, it is this writer's role to provide them with instruction and give them as many opportunities as possible to practice using this technology. A review of the literature has shown that once students have been exposed to online search techniques, they are able to retain these skills, and transfer and apply this knowledge in later years as they continue with their schooling. The literature confirms that students should learn how to use many different databases so they can eventually access information from Internet, CAI sources, or even from their public libraries. Studies have confirmed that all this is possible once students have been taught the basic strategies of learning how to electronically search for information. The techniques which the following authors have

used with success will be employed in this writer's school to teach the fifth grade students the skills required for using an electronic card catalog.

Ala (1992) writes that small group instruction is a valuable technique for training students in the principles of a Boolean search. She refers to Boolean searches as "a life skill" (p.42). This skill, if acquired, will enable the searcher to hone in on an exact piece of information or source quickly. The new automation system in the writer's media center has this technique in the search plus database. Users are expected to utilize the Boolean strategies in order to efficiently make use of the keyword search feature of the automation system. Helping fifth grades learn this technique will provide them with the opportunity to become "life-long learners, information seekers, and library users" (Ala, p.42). It teaches them to be exact and precise in seeking out online sources of information.

Pawlowski & Troutman (1991) stress the use of help posters and student leaders to help at various work stations when teaching students how to search online. They also used taped instructions at the various work stations and tutorials to assist students in learning how to access online databases. The article cites a Department of Labor report of 1991 which stated what skills the future worker must have in order to compete in a global economy. Those skills are "... critical thinking; organizing resources; working with others; acquiring, evaluating, and using

information, and working with technologies" (p. 14). This certainly must be considered a mandate for all educators to follow. Valenza (1992) urges the use of meaningful topics which can be used for assignments in the classroom. Students will learn the skill of seaching electronic databases, if they see it as relevant to their studies. Therefore,it is imperative for the media specialist and the classroom teacher to work together to develop pertinent assignments within the curriculum from which students can successfully find online resources to complete the assignments. Learning how to search can provide students with a sense of accomplishment, present challenges to them, but also give them enjoyment (Valenza). This is a skill which they will certainly need to be competitive in the future, either as a student or a worker.

Description and Justification for Solution Selected

Once this practicum was implemented, several strategies were employed to introduce, re-inforce, and review online searching techniques with the fifth graders. First of all, they were introduced to the concept of the information highway and why it will be so important to them in future years. The next step was to take a walking tours of the center, so they were familiar with its layout and where various types of print and non-print materials were housed. A trivial pursuit of library materials gave the students practice in how to find the needed

information in various types of reference books. Several lessons began with a group being introduced to new search techniques through the use of transparencies. Then, in partners or teams, they practiced these new methods. As the practicum continued, each student had work sheets which focused on search strategies, starting from the simplest concepts to the most sophisticated. During the sixth week of implementation, an online evaluation test was administered to chart their progress. During the final weeks of the implementation, students chose their own topics and subjects to search. Work sheets were provided so they could list what materials they had found and also they had to evaluate how helpful these materials were to them (Appendix F). Another exercise they were required to complete was the student usage survey (Appendix E), and a preference questionaire (Appendix D). Both of these surveys asked the fifth graders what methods they used in their searches, how successful their search was, which type of catalog did they prefer to use, and their reasons for this preference. During the twelfth week, each student took a final evaluation test, using the computer to search for each test item. The results of these tests and the feedback from the students proved to this writer that the instruction was need and worthwhile.

Report of Action Taken

Just before the implementation began, the proposal and calendar p[illegible] were shared with the building principal and the two fifth grade teachers whose classes would be participants. All agreed on the reasoning for this implementation and the time frame for the instruction. Before the actual instruction began, the media center was decorated with signs which promoted the concept that each workstation was an entry ramp to the information highway (Appendix G). In addition to this, students could listen to instructions, taped by this writer, which "walked" them through the various menu options of the electronic catalog (Appendix H). It was observed that many students throughout the day, would listen to this tape.

During the first few weeks of the implementation, students worked in partners or small groups to begin learning information retrieval methods. Most of the time, students came in groups of ten or twelve for 25 to 30 minute sessions. Any of the lessons which utilized overhead transparencies, were conducted in a conference room. This afforded the group a privacy to learn in an uninterrupted atmosphere and also some of the brainstorming sessions became rather boisterous. After these sessions, students were given work sheets to take to individual work stations so that they could practice the strategies which had just

been discussed. Some of the students came back during a recess time to practice their typing skills on the keyboarding machines which the media center had on hand. Since spring vacation arrived during the fifth week of this implementation. The students were given the optional assignment of going to a branch of the public library and trying out OPAC, the computerized system which most public libraries have. During the sixth week of this implementation, the fifth graders were given an individual skill evaluation test.The results are presented in the following table.

Table 1
Sixth week evaluation test results

	Passed	Tutor Needed
Students of Class A	24	4
Students of Class B	29	0

The four students who required help were tutored by their classmates. The only concept these students needed additional help in was how to access the print-out feature of the electronic card catalog. The final weeks of the implementation stressed students choosing topics which were relevant to them or to their classroom assignments. The worksheets emphasized their being able to utilize the Boolean search techniques and in this way, increasing the number of matches found which related to their subject. Although these students were much younger than normally thought possible to grasp this technique of online searching, through review and practice, they readily acquired this skill. This writer often

emphasized to them, the need for thinking of similar words or synonyms whenever they did a keyword search. During the final week of this project, the students completed a student usage survey and a preference worksheet. Their last task was to use their acquired skills to complete a post-test, showing whether they understood the simple and complex strategies in conducting online information retrieval. As a final strategy to the idea of traveling the information highway, an Indiana Jones theme party was held in celebration of the successful completion of the fifth graders' journey.

The employment of the above-mentioned teaching methods resulted in these fifth graders becoming knowledgeable users of an electronic catalog. They can now advance successfully to other online services with these same search strategies and skillfully and properly access needed data.

Teaching these skills was accomplished through a competency-based instruction in library/media computer skills. Two texts on this subject were used as additional instructional resources. One was entitled, Teaching search strategies for on-line catalogs (Winnebago, 1992) and the other one was Skills for life: library information literacy (Kibbey, 1994).

Chapter V

RESULTS, DISCUSSION AND RECOMMENDATIONS

Results

The problem addressed by this practicum was that fifth graders did not know how to use an electronic card catalog and seemed to become easily frustrated when trying to access it, or avoided it completely. In order to remedy this situation, small group sessions were scheduled for two fifth grade classes so that they could have hands-on experiences with the electronic card catalog. They were introduced to the concepts of searching online for data, how to manipulate their searches through the use of keywords and Boolean search terms, and given several hours of practicing these techniques in a computer lab. Worksheets were used throughout this implementation to re-inforce each concept and search technique. They were also given training in how to evaluate the appropriateness of the materials they accessed for their individual assignments.

Outcome #1. The first expected outcome of this practicum was that the fifth graders could use the electronic card, unassisted, as evidenced in a review of the help request cards and in the observations

of the media center staff. This outcome was achieved in that after having completed this training these fifth graders did not need any help in using the electronic catalog. They were often observed helping older students learn to access the search feature of this automated catalog.

Outcome #2. The second outcome expected 50 of 63 students to use the features of the electronic card catalog, as evidenced by the student usage survey (Appendix E). The actual number of students who completed this survey was 56. This outcome was achieved as the results of this following table summarize.

Table 2

Student Usage Survey	Did Use	Did Not
Author	1	55
Title	7	49
Subject	47	9
Truncation	1	55
Keyword	44	12
Boolean	42	14

Note: n=56 fifth graders who responded to this survey

Originally the projected number of fifth graders who would take part in this implementation was 63. But the number was reduced to a total of 57 because some students left the district and others had scheduling conflicts which did not allow them to take part in this instruction.

Outcome #3. After having completed this implementation, 50 of 63 fifth graders will prefer to use the electronic catalog more than the traditional card catalog, as evidenced through the use of a student preference questionaire (Appendix D). This outcome was achieved in that

only two students said that they preferred to use the card catalog, instead of the electronic catalog. The other 54 said they preferred to use the electronic catalog. They said it helped them find the materials they needed, and that they also found more information by utilizing the electronic system and not the card catalog.

Outcome #4. The fourth outcome stated that 50 of 63 fifth graders would increase their usage of print and non-print materials from the media center, as evidenced by individual circulation records. This outcome was achieved as evidenced by the circulation records presented in the following table.

Table 3
Book Circulation Records

Class A First Week of Implementation	4
Class B First Week of Implementation	1
Class A Sixth Week of Implementation	31
Class B Sixth Week of Implementation	42

These statistics clearly illustrate that instruction on the electronic catalog helped to encourage and increase book circulation. The fifth graders were able to come into the center frequently, they learned how to find books using the electronic catalog, and they took advantage of this knowledge.

Unexpected Outcome

During the third week of this implementation, it became

increasingly evident that the media center did not have enough work stations to provide the needed online practice time that was required for these fifth graders to progress at an acceptable pace. After the lesson part of the session was over, each student wanted to have his or her own time at a work station. Since the media center could only provide four access terminals, which were scattered throughout the center, some other arrangements had to be made to accomodate these eager information seekers.

A computer lab adjoins the media center. Its terminals can also be brought up on the library's network. During early morning times, there were ten to twelve terminals which could be dedicated to library instruction. This would also give these students additional experience in logging on to a network and then choosing which program to access. The computer lab instructor and this writer worked out a schedule which would allow the fifth graders lab time to practice their searching strategies. This also became very convenient for this writer, because all of the terminals were lined up along one wall. Being able to see each screen, having the students in close proximity, and being instantly available for any help they might need, was a wonderful enhancement to this instruction. The writer found that now two lessons could be combined into one session, because of the time saved by having each student at a terminal. Their learning became accelerated and they became even more enthusiatic about exploring the electronic card catalog.

Discussion

Being able to implement this practicum was a very enjoyable and rewarding experience for this author. The two fifth grade teachers also felt that it was a very positive experience for their students. Some of the most successful lessons seemed to be whenever students had to locate materials from the electronic catalog, and then go to the shelves and find these materials. This scavenger-hunt type activity was very popular with the fifth grade students.

In the first expected outcome of this practicum, it was projected that 50 of 63 students could use the electronic catalog after this instruction, without any assistance from the media center staff. In fact, all 57 students who received this training, accessed the electronic card catalog and found the needed data without having to ask any of the staff members for additional help. There is no doubt that this skill will be needed in future years. By the year 2000, 40 million homes in the United States may be linked to a fiber-optic network ("Fast Facts," 1994).

The second outcome expected 50 of 63 students to be able to utilize the features of the electronic catalog in their information searches. The results showed that all 47 of the 56 students used either keywords or Boolean terms to find needed information on their assigned topics. Most of them started out by doing a subject search, but then quickly graduated to the more complicated techniques of using keywords and Boolean terms to

find more subject matches. Although doing Boolean searches is a concept which is often considered too advanced for this age group, these students had no problems with the mechanics of this procedure. They enjoyed being able to manipulate words on the screen to produce even more possiblities for their subject searches. They soon learned that " Boolean is a tool to focus a search on exactly the information desired " (Ala, p.42, 1992).

The third outcome stated that 50 of 63 students would prefer using the electronic card catalog over the card catalog, as evidenced by a usage survey given to them during the last week of the implementation. This survey showed that 54 of the 56 students preferred the electronic catalog because of its many features. Some of the reasons they gave for this preference are the following. They liked an instant on-screen display of information, and knowing how many copies were available. They liked the help feature of the system, and that it listed materials alphabetically. They felt more materials could be found easily, and the print-outs were a big plus. One student wrote, " The card catalog doesn't give you information like the electronic catalog." One student said he like the color monitors. Finally, a quote that sums up the entire idea, " The electronic catalog shows you more stuff."

The fourth expected outcome stated that 50 of 63 fifth graders would increase their book circulation. Thanks to the electronice catalog, patron records were easily accessed. There was a marked increase in the number of books circulated from the start fo the implementation to its finish. One of the teachers confided that one of her students did not

like to read, until he started coming into the center for this instruction. Now he has started checking out Newbery Award winning books to read. Certainly having additional time in the media center has helped foster this interest. This implementation brought about many other outcomes. It was so rewarding to see these students help older students learn how to use the electronic catalog. Another time, when a fifth grader returned from being absent, her classmate said, "That's okay, I'll help her catch up!" The local papers also printed a photo and article of the Indiana Jones party (Appendix I), which was held to celebrate the end of the implementation period.

Certainly the enthusiasm from the classroom teachers, their students, and outside agencies contributed to the success of this practicum. These children will be the future travelers on the information superhighway, and they will know how to access its many ramps and waystations by starting out with this fundamental training.

Recommendations

This writer understands the importance of teaching all middle schoolers online searching techniques. This knowledge and skill will be required and expected of them as they continue their academic careers. The earlier they can have a basic understanding of these concepts, the easier it will be for them to grasp more sophisticated techniques in the future.

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In keeping with the fundamental concepts of this practicum, these recommendations are appropriate and suitable for those who might attempt a similar project:

1. Utilization of a computer lab with individual work stations would certainly help to faciliate learning and its progress. This would afford needed practice times for each student and be so beneficial to their confidence and attitudes. It would also help to deter frustration of not being able to get online immediately, after a concept has been taught or discussed.

2. Provide the students with topic or subject work sheets which will give them practice in keyword and Boolean search techniques. These topics should be of interest to their grade level and should produce many, many online matches. Doing a preliminary search before these work sheets are given to the students should uncover any "holes" in a library's collection, and also identify any missing or unavailable copies of the selected materials.

3. The use of an LCD palette is highly recommended. Using this device provides the class with the capability of seeing the actual menu of the electronic catalog as the instructor teaches them how to access its many different functions. If an LCD is not available, the use of transparencies which have been printed off the screen, showing each of the menus, would be better than teaching by a lecture on the needed search techniques.

4. Provide assignments which will utilize scavenger-hunt methods. Younger students seem to really enjoy this type of activity. Having prizes available for whichever group finds the most materials, or collects their materials the fastest, would be an added incentive for this event.

5. Require students to write evaluations of the materials they found in their searches. They should also know how to write bibliographic entries on these materials. Having these skills will help them in later years, when their online time is more rationed, or costlier.

6. Once students have acquired these information retrieval skills by being online, they will be able to apply these same skills to other online systems, housed in different libraries, or even in different data bases.

7. In order for keyword searches to be successful with younger students who may not have extensive vocabularies, the use of a junior thesarus is very helpful. Having one at each work station helped them locate alternate words for their keyword searches. During instructional times, the groups were encouraged to think of alternate words and extensions of word meanings to enlarge their search possibilities.

8. Cooperative learning techniques were used extensively in this practicum. Students worked in teams of two or in small groups of three to four. Peer tutoring was also encouraged. These techniques provided

confidence and a feeling of camaraderie and served to foster morale.

9. When the students are doing keyword and Boolean searches, it is helpful to have them write on their worksheets how many matches they found. Their seeing these numbers on their papers, really convinces them how important and valuable these techniques are to them.

10. Since many of the fifth graders did not have competent typing skills, they were encouraged to come in on their own time and practice typying using battery-operated keyborading machines (Appendix J). The students thought of these machines as toys, but they really learned how to type correctly and accurately. They made fewer typing errors during their online times, if they had used these keyboarding machines.

11. As a final event to conclude this instruction, plan a party which will emphasize their having traveled the information highway successfully. The party might take on the theme of an Indiana Jones adventure or a journey through obstacles which culminates in finding the lost treaure or city. This writer awarded certificates of achievement (Appendix K) and small bags of travel supplies to the special information travelers at her school. The students dressed in costumes which portrayed the topics or subjects they had searched for during this implementation. Having this type of event is very appealing to students and gives a finality to their passage as they become skilled users of an information retrieval system.

Dissemination

This writer intends to disseminate the results of this practicum by holding in-service workshops for other media specialists, publishing an article in a state-wide technology newspaper, and networking with other professionals.

As the practicum progressed, the writer observed how well these younger students could indeed grasp the abstract and critical thinking skills which only older children were thought to possess. Given some special tools, aids, and utilizing different teaching techniques, fifth graders are certainly capable of accessing an online data base and conducting sophisticated and complicated searches for information. Dr. Jean Piaget thought that this type of mental activity was improbable, if not impossible, for these younger students, just on the threshold of Formal Operations development. These fifth graders would surprise him. Senator Everett Dirkson once said, " There is no force as powerful as as idea whose time has come."

It was the sincere hope of this writer that having given this training to middle schoolers, they would become comfortable passengers on the information superhighway. A highway that will connect schools, people, and businesses into "virtual communities where people work together, even if they live in a different state, time zone, or country" (Allman, 1993, p.58).

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NAME_____ H.R.TEACHER_____

Pre-Test on accessing an electronic card catalog

Instructions: You will have to use the electronic card catalog to answer these questions. Write your answers on the test sheet.

1. Find a book on dogs. List the title and the call number.

_____

2. Who is the author?

_____

3. How many items does the media center have on Egypt?

_____

4. Choose a subject and find a book on it. List the title and call no.

_____ _____

5. The call no. 973.7 means the materials are about which U.S. war?

_____

APPENDIX A

PRE-TEST OF INFORMATIONAL RETRIEVAL SKILLS

NAME_____ H.R.TEACHER_____

Pre-Test on accessing an electronic card catalog

Instructions: You will have to use the electronic card catalog to answer these questions. Write your answers on the test sheet.

1. Find a book on dogs. List the title and the call number.

_____

2. Who is the author?

_____

3. How many items does the media center have on Egypt?

_____

4. Choose a subject and find a book on it. List the title and call no.

_____ _____

5. The call no. 973.7 means the materials are about which U.S. war?

_____

APPENDIX B

POST-TEST ON INFORMATIONAL RETRIEVAL SKILLS

NAME_____

Post-Test on accessing an electronic card catalog

Instructions: You will have to use the electronic catalog to answer these questions. Write your answers on the test sheet.

1. Does the media center have any books written by Lois Duncan?_____

2. How many copies of Tom Sawyer does the center have?

_____

3. Who wrote A Dog Named Kitty? _____

4. How many books did Asimov write? _____

5. How many endangered animals study prints does the media center have?

_____

6. Is Witch of Blackbird Pond in or out? _____

7. List the realia of Bridge to Terebithia._____

_____

8. What is the call number of Cadillac? _____

9. The call number for the Civil War is _____.

10. Conduct a search for a list of materials on plants.

11. Print out this search.

12. Does the media center have a book entitled Snot Stew?

_____

13. Who is the author? _____

14. Locate materials on water pollution. Show two different examples of these materials to the media center staff.

15. How many Newbery Award books are written by Judy Blume? _____

APPENDIX C

EVALUATION OF INFORMATIONAL RETRIEVAL SKILLS

NAME _____

Sixth week evaluation of student's informational retrieval skills

1. Student can find print and non-print materials in the library.

YES NO

2. Student can identify the components of the online terminal and properly handles the equipment.

YES NO

3. Student knows how to access the electronic catalog and how to logout when finished.

YES NO

4. Student can demonstrate how to electronically search for materials by author or title.

YES NO

5. Student can demonstrate the print feature of the electronic catalog.

YES NO

Number of YES answers _____

Number of NO answers _____

Student needs review in _____

_____

APPENDIX D

STUDENT AWARENESS AND PREFERENCE QUESTIONAIRE

GRADE _____

Student preference questionaire

Please circle the answer which best describes how you feel.

1. I like using the electronic catalog better than the card catalog.

YES NO

2. I like using the card catalog better than the electronic catalog.

YES NO

3. I found the information I needed in the electronic catalog.

YES NO

4. I found the information I needed in the card catalog.

YES NO

5. I think the electronic catalog helps me find more information than the card catalog.

YES NO

6. I think the card catalog helps me find more information than the electronic catalog.

YES NO

7. Please list some of the things you can learn from using the electronic catalog. _____ _____ _____

_____ _____ _____

8. Please list some of the things you can learn from using the card catalog. _____ _____ _____

_____ _____ _____ _____

APPENDIX E

STUDENT USAGE SURVEY

NAME_____

GRADE_____

Student usage survey

Please circle the answer or answers which best describe the type of search you did on the electronic card catalog.

1. I searched by Author Title Subject

2. I used in my search Keywords Truncation Wildcard(s)
(Root Words)

Stop Words And Or Not

3. I wanted this information for Myself Class assignment

4. I found enough information to complete my search. YES NO

5. I wanted information on _____.
(Please complete the sentence.)

APPENDIX F

WORK SHEET AND MATERIALS EVALUATION SHEET

NAME_____

BOOK SEARCH WORK SHEET

TOPIC_____

Go to the electronic card catalog and look up your topic using the subject search. Write down the **call number, author,** and **title** needed to find your book or books. Check to see that the book is available. Check the screen that notes "copies available." Find all or some of these books, etc.

Write the information for the book(s) you've found on the lines below. Take your information from the **title page.** The copyright date is located on the back of the title page.

_____

(Author's Last Name, First Name) (Title)

_____

(Place of Publication:) (Publisher) (Date)

_____

(Author's Last Name, First Name) (Title)

_____

(Place of Publication:) (Publisher) (Date)

NAME _____

MY MATERIALS EVALUATION SHEET

THESE MATERIALS REALLY HELPED ME.

1. _____
2. _____
3. _____

I DIDN'T FIND THESE MATERIALS HELPFUL.

1. _____
2. _____

REASONS WHY THE MATERIALS DIDN'T HELP ME.

_____

_____

_____

_____

OTHER COMMENTS ABOUT WHAT I FOUND ON MY TOPIC.

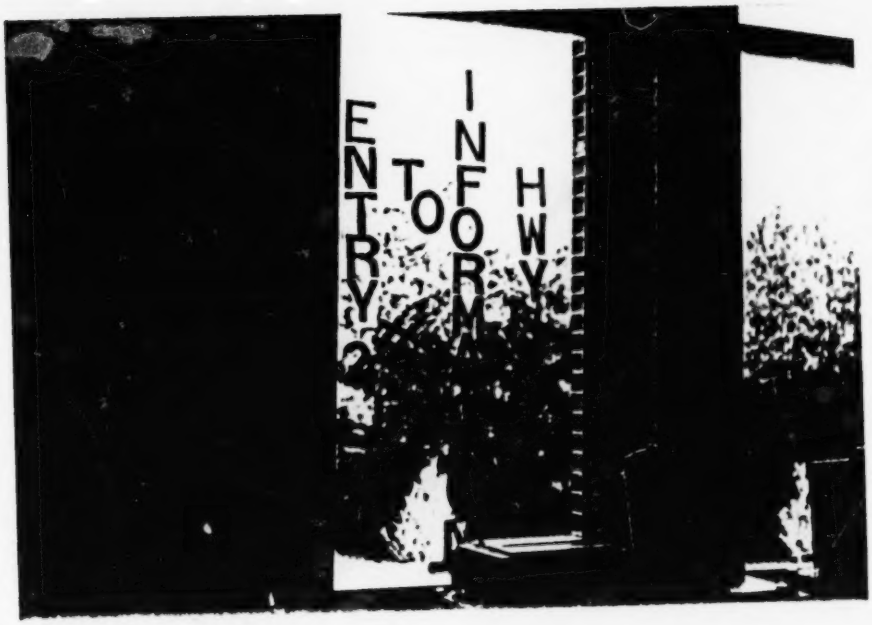
_____

_____

_____

APPENDIX G

MEDIA CENTER AND HALLWAY SIGNS



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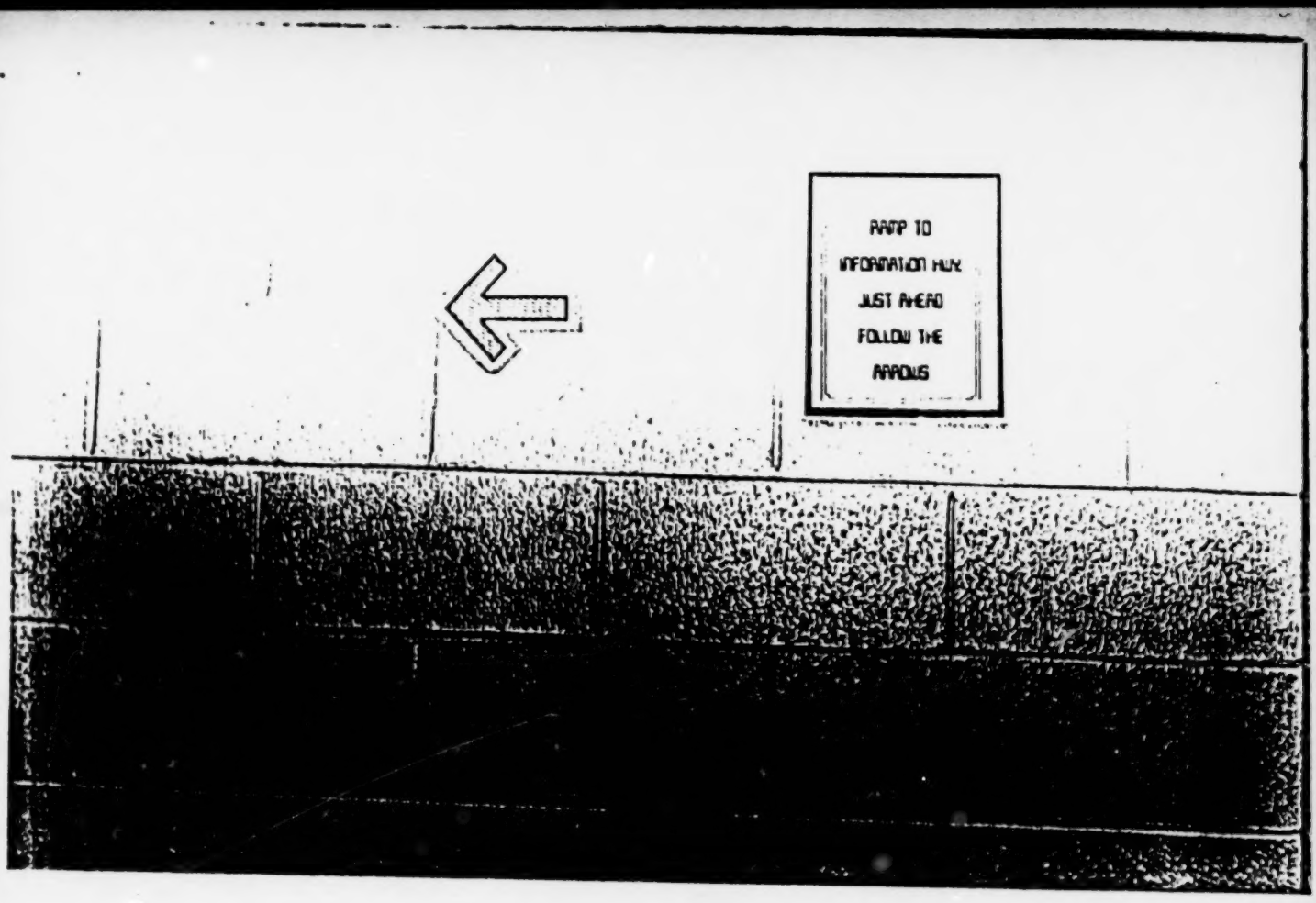

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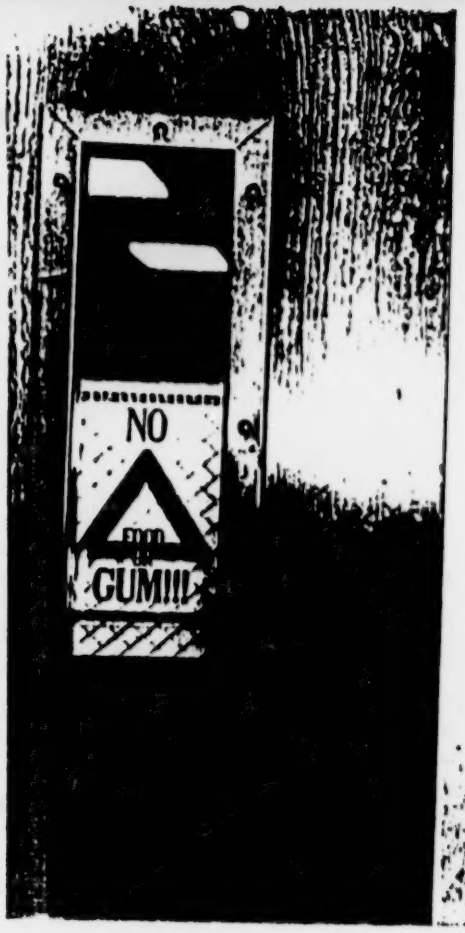

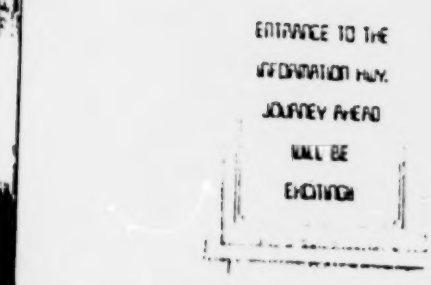

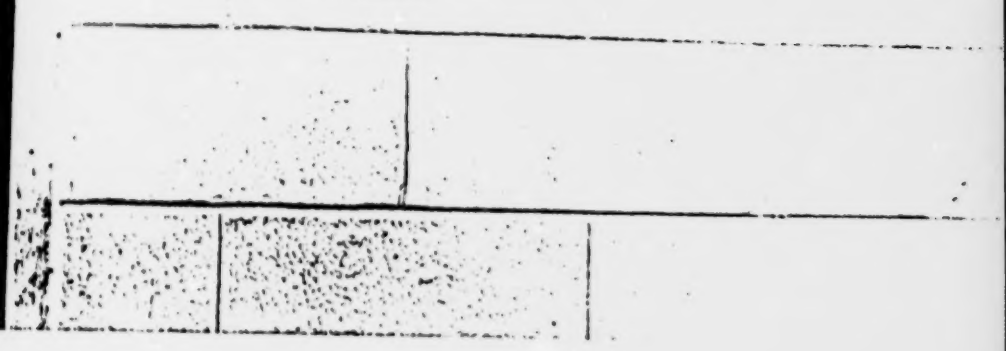

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APPENDIX H

HELP MESSAGE FOR TAPED INSTRUCTIONS AND STUDENT LISTENER

Need help with an online search?

Press the "Play" button and listen.

Please rewind the tape afterwards.

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APPENDIX I

SKILLFUL TRAVELERS ARTICLE

Information safari

Danielle Gilreath works at the computer as Leigh Motes and Julie Peeler look on. The students celebrated being "information travelers."

Certificates recognize skillful travelers

Wren Middle School's information travelers had an end of the year safari party that looked like a scene from Indiana Jones. The group of fifth graders, dressed in camouflage, khakis, binoculars, and jungle outfits celebrated the completion of their 12 week training program on how to search for online information.

For the past three months, students worked closely with media specialist, Annette Christy, who trained them on how to quickly find information using electronic data bases. The group of students from Melissa Feimster and Pat Jones' classes learned various ways of conducting searches using the library's electronic catalog.

In celebration of their achievement, both classes were presented certificates for achieving the rank of being a skillful traveler. Students recognized include: Pat Jones' class - Thomas Agnew, Jamie Alexander, Melissa Anderson, Kelli Butler, Ashley Cable, Jennifer Cordell, Meredith Craig, Mallory Eils, Matthew Fleming, Lloyd Gibson, Alison Gossett, Franklin Halstead, Amy Hargette, Matthew Ivester, Anna Jollie, Taru Kosonen, Julia Martin, Bryce Moody, Kimberly Mulligan, Joshua Nelson, Cortney Odicar, Matthew Orr.

Also, Julie Peeler, Edward Pressley, Katherine Reid, Lauren Slaughter, Matthew Styx, Gene Vinson, and Miranda White. Melissa Feimster's class - Jennifer Banks, Devon Caldwell, Jessica Cook, Joseph Cox, Alexis Dickerson, Travis Fowler, James Freeman, Jessica Fuller, Elizabeth Gilreath, Melissa Jones, James Kay, Wendi Kelley, Jeremy McCauley, Karli Merritt, Katie Miesse, Seth Morrow, Leigh Notes, Nadia Neshan, Jennifer Osborne, Scott Price, Stephanie Ratliff, Brittany Russ, Craig Scott, Christopher Stokes, Casey Tompkins, Anthony Tran, Amanda Trawick, James Winebrow.

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APPENDIX J

STUDENTS USING THE KEYBOARDING MACHINES

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APPENDIX K

STUDENT ACHIEVEMENT CERTIFICATES

COMPUTER WHIZ-KID AWARD

LEIGH MOTES
Traveled the information highway with great skill.

Annette Christy
Annette Christy, Media Center

May 26, 1994